

MU  
**VMDL**  
 Newsletter

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A MESSAGE FROM THE DIRECTOR

A late Happy New Year to all. It was great to see so many clients and friends in the 2018 Missouri Veterinary Medical Association Convention.

I would like to thank those who came to the VMDL Advisory Meeting on Jan. 19. A special thank you goes to Senator Dan Brown for taking the time out of his busy schedule to attend the VMDL Advisory Meeting. As we all know, Sen. Brown is a true leader of Missouri and a champion of veterinary medical profession. His support is essential to the success of the VMDL. In the advisory meeting, we discussed several important topics, including customer service, test development, and VMDL facility needs.

New tests that are available through the VMDL include the following: CWD ELISA, CWD IHC, qPCR for Feline Calicivirus, qPCR for *Neospora caninum*, qPCR Panel for Feline Respiratory Pathogens (*Chlamydia* spp., Feline Herpes Virus, *Mycoplasma* spp., Feline Calicivirus), and qPCR Panel



for Tickborne Pathogens (*Anaplasma* spp., *Ehrlichia* spp., Lyme disease causing *Borrelia* spp., and *Rickettsia* spp.).

As always, clients' feedback and constructive criticism are highly appreciated by the VMDL. After all, we are here to serve the citizens of Missouri, especially the practicing veterinarians, producers, and owners.

Best regards,  
 Dr. Shuping Zhang, Director,  
 Veterinary Medical Diagnostic Laboratory  
 Professor, Veterinary Pathobiology

**MU Veterinary Medical Diagnostic Laboratory Achieves Level 1 Status**

The Veterinary Medical Diagnostic Laboratory (VMDL) at MU's College of Veterinary Medicine has moved up in class.

"The VMDL is now a Level 1 Laboratory in the U.S. Department of Agriculture's National Animal Health Laboratory Network (NAHLN)," says Shuping Zhang, PhD, MS, DACVM, director of the VMDL.

Established in June 2002 with the passage of the Public Health Security and Bioterrorism Preparedness and Response Act, NAHLN is a nationally coordinated network of federal, state, and university-associated laboratories that provide animal health diagnostic testing to detect biological threats to the nation's food animals, thus protecting animal health, public health, and the nation's food supply. The network labs support early detection, rapid response, and appropriate recovery from high-consequence animal diseases.

NAHLN laboratories are classified into four different levels based on geographic distribution, population density of animals, farm gate values and risk of foreign animal disease introductions as well as the laboratories' capability, capacity and contributions. Currently, there are 51 NAHLN laboratories; 15 are designated as Level 1. Level 1 laboratories have the capacity to perform tests on large numbers of samples that originate from U.S. farmed food animals.

The VMDL had been a Level 2 facility. Based on the recent achievements in

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## *Level 1 Lab, continued*

disease surveillance, building diagnostic capacity, and promoting the implementation of animal health programs at the national level, the VMDL was promoted. At this time, the VMDL is Missouri's only facility that is a Level 1 NAHLN laboratory, fully accredited by American Association of Veterinary Laboratory Diagnosticians, and Tier 1 Laboratory of the Food and Drug Administration Veterinary Laboratory Investigation and Response Network.

"Under the NAHLN program, the MU VMDL plays a critical leadership role in the diagnosis, surveillance, and response to diseases that could be biological threats to animals and the public," says Zhang, who also serves as a clinical microbiologist at the VMDL and is a professor of veterinary pathobiology. "These diseases include avian influenza, exotic Newcastle disease in poultry, classical swine fever or hog cholera, chronic wasting disease in deer and elk, contagious equine metritis, foot-and-mouth disease, pseudorabies, porcine epidemic diarrhea, swine Senecavirus, vesicular stomatitis that affects cattle, horses and pigs, and antimicrobial resistance in major animal species.

"As a full-service, all-species diagnostic laboratory, the VMDL serves the entire state of Missouri, trains veterinary students and residents, and supports biomedical and translational research," Zhang continues. "This designation of Level 1 signifies our high-quality service, professional and technical capabilities, and contributions to regional and national animal health programs. This new status will enable us to receive additional federal funding for rapid diagnosis and surveillance of high-consequence animal diseases. Our clients will benefit from a better-funded and nationally recognized VMDL."



*Associate Professors W. Jefferson Mitchell, DVM, PhD, and Kei Kuroki, DVM, PhD, meet MVMA conference attendees at the VMDL booth.*

## NEWS BRIEFS

### VMDL Faculty and Staff Attend MVMA

Did you spot us at the 126th Missouri Veterinary Medical Association convention at the VMDL, was on hand to provide two continuing education lectures on equine toxicosis. Additionally, many of our faculty and staff had the opportunity to visit with conference attendees at the VMDL booth. It is always refreshing to put our client names and faces together, and we hope that you feel the same way.

### Updated Information on Bacteriology Testing

Due to a cost increase for the reagents, the price for the fosfomycin E-test for multi-resistant *Escherichia coli* has been

increased from \$13.50 to \$17.50. Coming up in summer 2018, we will have a specific test code to request contagious equine metritis cultures.

Don't forget to ship your bacteriology submissions with cold packs even in the winter months! Parcels are often stored indoors and are still susceptible to increased temperatures. Don't let your sample be ruined because it sat too near a radiator during shipment.

### Clinical Pathology Testing Updates

We now offer on-site anti-factor Xa testing for monitoring canine patients receiving heparin therapy. This testing can be used for either unfractionated or

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## Sample Handling — Tips for Success with Bacteriology Submissions

By Tamara Gull, DVM, PhD, Bacteriology Section Head

- Submitting a culture sample from an abscess? The center of an abscess may be sterile due to neutrophil killing of bacteria. For best results from an abscess sample, use a swab to vigorously sample the inside of the abscess capsule, or obtain a pus sample from the periphery of the abscess instead of the center. Also, please ensure that your sample is in appropriate bacterial transport medium. You can order Bacti-swabs from the bacteriology lab. The cost is \$6 for a pack of 10 and we can ship them to you. Bacti-swabs can also be used for PCR testing in most cases.
- Are you considering *Mycoplasma* as a cause of disease in your patients? *Mycoplasma* culture is no longer done by bacteriology; it is now a molecular test. Because *mycoplasmas* are fastidious and slow to grow, PCR is a far better test. If you would like to look for *Mycoplasma* in your samples as well as other bacteria, remember to request *Mycoplasma* PCR in addition to bacterial culture. *Mycoplasmas* are implicated in canine and feline respiratory disease as well as ruminant respiratory disease, keratoconjunctivitis, mastitis, otitis and arthritis. If you have questions about whether *Mycoplasma* PCR would be appropriate for your sample, please call the bacteriology or molecular laboratories.
- Are you looking for *Moraxella* bacteria in your ruminant pinkeye diagnostics? Recovery of *Moraxella bovis* and *Moraxella bovoculi* is significantly higher if you use swabs with a transport medium that contains charcoal. The bacteriology lab can provide swabs with charcoal-containing transport medium for the cost of shipping. If you are also wishing to have molecular testing done (IBR or *Mycoplasma*), the charcoal can interfere. In that event, we recommend obtaining swabs in both non-charcoal-containing and charcoal transport medium. Call the bacteriology lab at 573-884-9245 if you have any questions.



Research specialist Abel Vega approaches a giant tortoise during a visit to the Galápagos Islands.

## MU Veterinary Team Walks in the Footsteps of Darwin

In the interest of fundamental, boots-on-the-ground science a team of Missouri scientists and veterinarians dispatched to the Galápagos in October 2016.

“The ABG (Agencia de Regulación y Control de la Bioseguridad y Cuarentena para Galápagos, or Agency for Biosafety and Quarantine Regulation and Control for the Galápagos) is interested in developing diagnostic testing capacity for livestock at their facility there on the island,” said John Middleton, a professor of food animal medicine and surgery at MU’s College of Veterinary Medicine. “When they send test samples off the island, the time lag in getting results

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### News Briefs, continued

low molecular weight heparin, but you will need to indicate on the submission form which type the patient is receiving. The cost is \$35 per sample.

Sample handling instructions:

- Clean venipuncture is essential (as with all of our coagulation testing).

- Collect blood into a blue top (sodium citrate) tube.
- Ensure appropriate fill level of the tube (should be a ratio of 9:1 blood to anticoagulant).
- Centrifuge the sample at 1500 g or greater for 10 minutes.
- Transfer plasma to a separate plastic

tube, labeled with the patient identity information and date.

- Freeze the specimen, and send on ice overnight to our laboratory.
- Indicate on the submission form if we are assessing for unfractionated or low molecular weight heparin activity.

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*Galapagos, continued*

is significant. In one instance, it took a month to get diagnostic results back from the mainland. For timely response to a problem, that doesn't work out very well."

The visit was conceived based on a conversation with Patricia Parker, PhD, at the University of Missouri–St. Louis. Parker, an evolutionary biologist and endowed professor in zoological studies, is a notable Galápagos investigator. Her avian research in the Galápagos has resulted in nearly 100 scientific papers and 15 book chapters. Parker also serves as senior scientist at the St. Louis Zoo.

"Dr. Parker has been conducting research in the Galápagos for years," Middleton says. "She is a friend of Dr. Marilyn Cruz, executive director of the ABG. Some work they had been doing on disease surveillance in their cattle population led Dr. Cruz to ask Dr. Parker if she knew somebody in the U.S., possibly affiliated with the university, who could help with these livestock diseases."

The Galápagos archipelago consists of 16 islands with a population of 20,000 people and 30,000 cattle. The islands

have prohibited the importation of livestock since 1989, so the health of native livestock herds is essential. The humans are citizens of Ecuador; the cattle tend to be Brown Swiss, Holsteins, and Jerseys.

"So, there were actually two aspects to our visit: to have our team work with their diagnostic lab to look at how they can improve diagnostic testing capacity, and to understand the livestock population and how the livestock are managed," according to Middleton.

Middleton, DVM, PhD, DACVIM; Michael Zhang, associate clinical professor of biomedical sciences and leader of the serology section of the Veterinary Medical Diagnostic Laboratory (VMDL); and Abel Vega, MS, a research specialist in the avian section of the VMDL, made up the Mizzou contingent to the island of Santa Cruz in the Galápagos.

Parker's PhD candidate, Samoa Asigau, represented the University of Missouri–St. Louis. Asigau was making her fourth trip to the Galápagos.

"Really, what we are trying to do is optimize their testing capacity so that they can get a better turnaround on tests," Middleton explained. "In order to un-

derstand how you test for disease, you have to understand how diseases are potentially transmitted, which is why you go out and look at the population and see how farms are managed. It brings the hands-on approach and the laboratory approach together."

The natural division of labor found Middleton working mainly in the field, while the remainder of the team primarily utilized their expertise in the lab.

"While Mike, Samoa and Abel were working in the lab, I'd continue to go out and do various farm visits and go to their slaughter facilities. That was really my role: to interact between what goes on in the lab — which is Mike, Abel and Samoa — versus what actually happens on the farm, and then come together as a group to understand the best methods for ABG to diagnose and control disease on the islands."

Abel Vega filled several roles for the team. A native of Bolivia, he speaks Spanish fluently.

The two diseases the team specifically focused on were infectious bovine rhinotracheitis (IBR) and bovine viral diarrhoea (BVD).

**VMDL Portal Access**

This free service for clients enables 24-hour daily access to test results and improves transparency of the status of the sample and cost of testing.

<https://vetview.cvm.missouri.edu>

